

REMARKS

Claims 1-37 are in the application. Claim 1 is amended to incorporate a limitation of claim 10. Claim 20 is amended to incorporate a limitation of claim 29. And claims 20 and 28 are amended to conform to the amendments made to independent claims 1 and 20. No new matter is entered into the case by the amendments.

Reconsideration and allowance of claims 1-37 are respectfully requested in view of the following remarks.

A. Claims 1-3, 5-9, and 11-12 Are Patentably Distinguished Over Izumi

Claims 1-3, 5-9, and 11-12 are rejected under 35 U.S.C. §102(b) as being allegedly anticipated by U.S. Patent No. 3,720,615 to Izumi et al. ("Izumi"). This rejection is respectfully traversed.

Claim 1 defines a power transmission fluid composition comprising an oil-soluble aliphatic tertiary amine component present in the fluid in an amount from about 0.5 percent by weight. Nothing in Izumi discloses, teaches, or suggests a power transmission fluid comprising the particular oil-soluble tertiary amine component described in the present application and present in the fluid in an amount from about 0.5 percent by weight. Izumi discloses fluids containing, for example, 0.06, 0.14, and 0.2 percent by weight, of an aliphatic tertiary amine.

Further, the amended limitation of claim 1 finds support in original claim 10, which is not rejected over Izumi. Therefore, the rejection with respect to Izumi is overcome and reconsideration and allowance of claims 1-3, 5-9, and 11-12 are respectfully requested.

B. Claims 1-4, 6-7, and 9-12 Are Patentably Distinguished Over Lowe

Claims 1-4, 6-7, and 9-12 are rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over U.S. Patent No. 4,177,153 to Lowe ("Lowe"). This rejection is respectfully traversed.

Claim 1 defines a power transmission fluid and an additive combination that effectively improves the friction durability of the transmission fluid. The fluid contains a base oil, and a power transmission fluid additive composition that includes a dispersant

and a tertiary amine, $R_1R_2NR_3$, wherein R_1 comprises about 1 to about 4 carbon atoms and R_2 and R_3 independently comprise about 8 to about 100 carbon atoms. In other words, the tertiary amine contains at least two relatively long chain hydrocarbon groups and at least one relatively short chain hydrocarbon group.

In the Office Action, Lowe was cited as the primary reference in all of the obviousness rejections. Lowe discloses, teaches, and suggests a crankcase lubricant that provides improved oxidation properties. This is accomplished by a synergistic combination of a sulfur-containing antioxidant and a tertiary amine having one R group having at least 11 carbon atoms. There is no disclosure in Lowe relating to power transmission fluids or methods to improve the friction durability of power transmission fluids and thus Lowe fails to teach, suggest, or disclose a power transmission fluid composition as claimed in claim 1.

Additionally, Lowe discloses that amines having one relatively long chain hydrocarbon group having at least 11 carbon atoms are superior in oxidation performance. (See Col. 7, lines 19-26). Further, Lowe expresses in column 4, lines 13-15, a preference for tertiary amines having one relatively long hydrocarbyl chain and two relatively short hydrocarbyl chains. There is nothing in Lowe that teaches, suggests, or discloses a tertiary amine containing one short chain hydrocarbon group and two relatively long chain hydrocarbon groups as claimed in claim 1. In fact, all of the examples in Lowe either have only one relatively long chain hydrocarbon group, all short chain hydrocarbon groups, or all long chain hydrocarbon groups. Therefore, Lowe not only fails to teach, suggest, or disclose the claimed amine component of claim 1 but also leads away from such a tertiary amine component of claim 1.

Finally, there is no teaching, suggestion, or disclosure in Lowe to provide a composition that contains a dispersant and a particular tertiary amine component in order to provide the advantages of the claimed invention. In fact, Lowe clearly suggests that the required components for a reduction in oxidation of a crankcase lubricant are a sulfur-containing antioxidant component and a tertiary amine component. While dispersants may be included, there is no specific teaching in Lowe that would lead one skilled in the art to select the combination of applicants' amine with a dispersant for any purpose, much less for the purpose of improving the friction durability of a transmission fluid.

Accordingly, Lowe is manifestly deficient in teaching, suggesting, or disclosing all of the elements of the claimed invention and the benefits thereof. Since Lowe fails to teach, suggest, or disclose all of the elements of claim 1, reconsideration and allowance of claims 1-4, 6-7, and 9-12 are believed in order and are respectfully requested.

C. Claims 13, 15-16, and 18 Are Patentably Distinguished Over Lowe in view of Ohtani

Claims 13, 15-16, and 18 are rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Lowe in view of U.S. Patent No. 5,344,579 to Ohtani et al. ("Ohtani"). This rejection is respectfully traversed.

Claim 1 defines a power transmission fluid and to an additive combination that effectively improves the friction durability of the transmission fluid. The fluid contains a base oil, and a power transmission fluid additive composition that includes a dispersant and a tertiary amine, $R_1R_2NR_3$, wherein R_1 comprises about 1 to about 4 carbon atoms and R_2 and R_3 independently comprise about 8 to about 100 carbon atoms. In other words, the tertiary amine contains at least two relatively long chain hydrocarbon groups and at least one relatively short chain hydrocarbon group.

Lowe discloses, teaches, and suggests a crankcase lubricant that provides improved oxidation properties. This is accomplished by a synergistic combination of a sulfur-containing antioxidant and a tertiary amine having one R group having at least 11 carbon atoms. There is no disclosure in Lowe relating to power transmission fluids or methods to improve the friction durability of power transmission fluids and thus Lowe fails to teach, suggest, or disclose a power transmission fluid composition as claimed in claim 1. Further, nothing in Lowe teaches, suggests, or discloses a tertiary amine containing one short chain hydrocarbon group and two relatively long chain hydrocarbon groups as claimed in claim 1.

Ohtani discloses a lubricant composition comprising a hydroxyalkyl aliphatic imidazoline and a di(hydroxyalkyl) aliphatic tertiary amine. The di(hydroxyalkyl) aliphatic tertiary amine is disclosed as containing two hydroxyalkyl groups containing 2-4 carbon atoms and one aliphatic group containing 10-25 carbon atoms. Therefore, nothing in Ohtani discloses, teaches, or suggests a tertiary amine containing one short

chain hydrocarbon group and two relatively long chain hydrocarbon groups as claimed in claim 1.

One of skill in the art would find no motivation to combine Lowe with Ohtani since Lowe is directed toward a crankcase lubricant with improved oxidation properties and Ohtani is directed toward a lubricant composition for maintaining a substantially constant static breakaway coefficient of friction. Further, purely for the sake of argument, if one of skill in the art did look to combine Lowe with Ohtani, in spite of the lack of motivation for doing so, one might substitute the tertiary amine having one R group having at least 11 carbon atoms of Lowe with the di(hydroxyalkyl) aliphatic tertiary amine of Ohtani. Such a combination would result in a crankcase lubricant containing a di(hydroxyalkyl) aliphatic tertiary amine. However, such a combination would still not meet the limitations of claim 1, i.e., of providing a power transmission fluid having a tertiary amine containing one short chain hydrocarbon group and two relatively long chain hydrocarbon groups.

Accordingly, the combination of Lowe with Ohtani fails to teach, disclose, or suggest all of the elements of the present claims. Reconsideration and allowance of claims 13, 15-16, and 18, which are all dependent upon independent claim 1, are hereby respectfully requested.

D. Claims 14, 17, and 19 Are Patentably Distinguished Over Lowe in view of Watts

Claims 14, 17, and 19 are rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Lowe in view of U.S. Patent No. 6,225,266 to Watts et al. ("Watts"). This rejection is respectfully traversed.

Claim 1 defines a power transmission fluid and to an additive combination that effectively improves the friction durability of the transmission fluid. The fluid contains a base oil, and a power transmission fluid additive composition that includes a dispersant and a tertiary amine, R₁R₂NR₃, wherein R₁ comprises about 1 to about 4 carbon atoms and R₂ and R₃ independently comprise about 8 to about 100 carbon atoms. In other words, the tertiary amine contains at least two relatively long chain hydrocarbon groups and at least one relatively short chain hydrocarbon group.

Lowe discloses, teaches, and suggests a crankcase lubricant that provides improved oxidation properties. This is accomplished by a synergistic combination of a sulfur-containing antioxidant and a tertiary amine having one R group having at least 11 carbon atoms. There is no disclosure in Lowe relating to power transmission fluids or methods to improve the friction durability of power transmission fluids and thus Lowe fails to teach, suggest, or disclose a power transmission fluid composition as claimed in claim 1. Further, nothing in Lowe teaches, suggests, or discloses a tertiary amine containing one short chain hydrocarbon group and two relatively long chain hydrocarbon groups as claimed in claim 1.

Watts discloses a zinc-free lubricating composition comprising, amongst other components, a friction modifier that is selected from the group consisting of succinimides and ethoxylated amines. The ethoxylated amine is disclosed as containing one relatively long chain and two ethanol groups. Therefore, nothing in Watts discloses, teaches, or suggests a tertiary amine containing one short chain hydrocarbon group and two relatively long chain hydrocarbon groups as claimed in claim 1.

One of skill in the art would find no motivation to combine Lowe with Watts. Lowe is directed toward a crankcase lubricant with improved oxidation properties. Further, Lowe discloses and teaches that its crankcase lubricant compositions contain from 2 to 40 mmols of zinc per kilogram or from 9 to 40 mg of zinc per kilogram of oil. (See Col. 2, lines 62-64 and Col. 4, lines 21-53). Watts is directed toward a zinc-free lubricant composition for providing enhanced low temperature friction characteristics.

Further, purely for the sake of argument, if one of skill in the art did look to combine Lowe with Watts, in spite of the lack of motivation for doing so, one might substitute the tertiary amine having one R group having at least 11 carbon atoms of Lowe with the ethoxylated amine containing one relatively long chain and two ethanol groups of Watts. Such a combination would result in a crankcase lubricant containing an ethoxylated amine containing one relatively long chain and two ethanol groups. However, such a combination would still not meet the limitations of claim 1, i.e., of providing a power transmission fluid having a tertiary amine containing one short chain hydrocarbon group and two relatively long chain hydrocarbon groups.

Accordingly, the combination of Lowe with Watts fails to teach, disclose, or suggest all of the elements of the present claims. Reconsideration and allowance of claims 14, 17, and 19, which are all dependent upon independent claim 1, are hereby respectfully requested

E. Claims 20-35 Are Patentably Distinguished Over Lowe in view of Papay and Field

Claims 20-35 are rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Lowe in view of U.S. Patent No. 4,795,583 to Papay ("Papay") and U.S. Patent No. 6,844,301 to Field et al. ("Field"). This rejection is respectfully traversed.

Claim 20 defines a method for improving the friction durability of a transmission fluid comprising: preparing a transmission fluid by adding to a base oil, an additive composition comprising: an ashless dispersant and an oil-soluble tertiary amine component, $R_1R_2NR_3$, wherein R_1 comprises about 1 to about 4 carbon atoms and R_2 and R_3 independently comprise about 8 to about 100 carbon atoms. In other words, the tertiary amine contains at least two relatively long chain hydrocarbon groups and at least one relatively short chain hydrocarbon group.

Lowe discloses, teaches, and suggests a crankcase lubricant that provides improved oxidation properties. This is accomplished by a synergistic combination of a sulfur-containing antioxidant and a tertiary amine having one R group having at least 11 carbon atoms. There is no disclosure in Lowe relating to power transmission fluids or methods to improve the friction durability of power transmission fluids and thus Lowe fails to teach, suggest, or disclose a power transmission fluid composition as claimed in claim 1. Further, nothing in Lowe teaches, suggests, or discloses a tertiary amine containing one short chain hydrocarbon group and two relatively long chain hydrocarbon groups as claimed in claim 20.

Papay discloses an automotive transmission fluid comprising, amongst other components, an aliphatic tertiary amine having one long chain and two short chain groups. (See Abstract). The amine is disclosed as containing one long chain having at least 10 carbon atoms and two short chains having up to 4 carbon atoms. Therefore,

nothing in Papay discloses, teaches, or suggests a tertiary amine containing one short chain hydrocarbon group and two relatively long chain hydrocarbon groups as claimed in claim 20.

Field discloses a synthetic ester-containing engine lubricant containing an amine-based friction modifier for improved engine performance and cleanliness. The amine-based friction modifier may be a tertiary amine containing a relatively short chain alcohol. The tertiary amine of claim 20 defines R1 as comprising an alkyl or alkenyl. Therefore, nothing in Field discloses, teaches, or suggests a tertiary amine containing one short chain hydrocarbon group and two relatively long chain hydrocarbon groups as claimed in claim 20.

One of skill in the art would find no motivation to combine Lowe with Papay and Field. Lowe is directed toward a crankcase lubricant with improved oxidation properties. Papay is directed toward an automotive transmission fluid. Field is directed toward a crankcase fluid. Further, none of the cited references disclose the particular tertiary amine claimed in claim 20. Therefore, even if one were to combine these references in some way, one would not arrive at the presently claimed combination.

Therefore, claim 20 is patentable over Lowe, Papay, and Field, and dependent claims 21-35 are also patentable over the references. Accordingly, reconsideration and allowance of claims 20-35 is hereby respectfully requested.

F. Claim 36 Is Patentably Distinguished Over Lowe in view of Papay and Field and further in view of Ohtani

Claim 36 is rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Lowe in view of Papay and Field and further in view of Ohtani. This rejection is respectfully traversed.

None of the cited references disclose the particular tertiary amine as claimed in claim 20. Therefore, the combination of Lowe with Papay, Field, and Ohtani remains manifestly deficient in providing all of the elements of the present claims for the reasons discussed herein. Accordingly, claim 36, as dependent upon independent claim 20, is likewise nonobvious in view of the cited combination of references, and reconsideration and allowance of claim 36 is hereby respectfully requested.

G. Claim 37 Is Patentably Distinguished Over Lowe in view of Papay and Field and further in view of Watts

Claim 37 is rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Lowe in view of Papay and Field and further in view of Watts. This rejection is respectfully traversed.

None of the cited references disclose the particular tertiary amine as claimed in claim 20. Therefore, the combination of Lowe with Papay, Field, and Watts remains manifestly deficient in providing all of the elements of the present claims for the reasons discussed herein. Accordingly, claim 37, as dependent upon independent claim 20, is likewise nonobvious in view of the cited combination of references, and reconsideration and allowance of claim 37 is hereby respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration of this application and the timely allowance of the pending claims.

FEES

The undersigned believes that there are no fees associated with this filing. However, if the calculations are incorrect, the Commissioner is hereby authorized to charge any deficiencies in fees or credit any overpayment associated with this communication to Deposit Account No. 12-2355. Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account No. 12-2355.

Respectfully submitted,
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By:

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